

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Kijima et al.

Application No.: Not Yet Known

Our File: FUK-195942.1

Filed: Not Yet Known

Date: February 5, 2002

For: IMAGING APPARATUS

Group: Not Yet Known

Examiner: Not Yet Known

PRELIMINARY AMENDMENT

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the application as follows:

IN THE TITLE

Please delete the title as filed and insert the following new title:

--METHOD AND APPARATUS FOR ADJUSTING SWEEP-OUT
FREQUENCY OF AN IMAGING APPARATUS RESPONSIVE TO THE
CONDITION OF A POWER SOURCE--.

IN THE SPECIFICATION

On page 1, at line 1, please insert the following:

--CROSS REFERENCE TO RELATED APPLICATION

This application is a divisional of U.S. Patent Application No. 09/350,335, filed July 9, 1999.--

Page 1, line 2, delete "BACKGROUND" and insert instead --FIELD--.

Page 1, after line 5, and before line 6, insert --BACKGROUND OF THE INVENTION--.

Page 1, line 14, delete "or", and insert instead --for--.

Page 2, line 14, delete "compresses", and insert instead --compressed--.

Page 3, line 7, after "obtaining", insert --a--.

Page 3, line 19, change "charge discharge" to --discharge of charge--.

Page 5, line 18, delete "to" and insert instead --with--.

Page 5, line 27, delete "to" and insert instead --with--.

Page 6, line 5, delete "V5" and insert instead --V6--.

Page 8, line 3, delete "to" and insert instead --with--.

Page 9, line 13, delete "of" and after "frequency", insert --,--.

Page 9, line 21, after "is", insert --a--.

Page 9, line 21, change "normally open" to --normally-open--.

Page 10, line 6, after “Furthermore,”, insert --a--.

Page 10, line 15, after “trigger,”, insert --a--.

Page 11, line 10, after “judging”, insert --an--.

Page 12, line 12, after “than”, insert --when--.

Page 13, line 9, after “around”, insert --(i.e. is located near to)--.

Page 14, line 23, after “judging”, insert --a--.

Page 14, line 28, after the second occurrence of “of”, insert --the--.

Page 15, line 2, delete “Other”, and insert instead --The above as well as other--.

Page 15, line 18, delete “flow” and insert instead --timing--.

Page 16, line 25, delete the first occurrence of “the” and insert instead --this--.

Page 17, line 22, delete “having” and after “open”, insert --at both--.

Page 18, line 8, after “pair”, insert --of--.

Page 18, line 14, delete “prefix”, and insert instead --suffix--.

Page 18, line 15, delete “prefix”, and insert instead --suffix--.

Page 18, line 19, delete “to”, and insert instead --together--.

Page 19, line 4, delete “51y” and insert instead --51z--.

Page 19, line 9, delete “fix”, and insert instead --fixed--.

Page 19, line 12, delete “fix”, and insert instead --fixed--.

Page 20, line 4, delete “65” and insert instead --66--.

Page 20, line 22, delete “fix” and insert instead --fixed--.

Page 21, line 14, delete “The” and insert instead --These--.

Page 21, line 19, after “as”, insert --a--.

Page 22, line 9, delete “4” and insert instead --5--.

Page 22, line 26, after “apparatus,”, insert --to--.

Page 23, line 28, delete “to” and insert instead --with--.

Page 25, line 23, delete “to” and insert instead --by--.

Page 27, line 23, delete “210” and insert instead --20--.

Page 28, line 5, delete “21” and insert instead --f2--.

Page 29, line 7, after “to”, insert --whether--.

Page 29, line 11, delete “f12” and insert instead --f--.

Page 32, line 13, delete “VBC1” and insert instead --VBC2--.

Page 33, line 16, delete “209” and insert instead --20--.

Page 33, line 27, delete “considerations” and insert instead --consideration--.

Page 34, line 5, delete “in dependence” and insert instead --dependent--.

Page 34, line 23, delete “it”.

IN THE CLAIMS

Please delete claims 1-5 and 7-14 without prejudice.

Please amend claim 6 as follows:

6. (Amended) An imaging apparatus having an imaging element for accumulating signal charge corresponding to incident scene light flux in a photo-electric converting element section comprising:

a sweep-out means for sweeping out unnecessary charge in the imaging element;
an operating condition judging means for judging a supply voltage level; and
a control means for lowering a sweep-out frequency of the sweep-out means when a supply voltage level is lower than a predetermined voltage.

Please add the following new claims 15-33:

--15. A method for operating an imaging apparatus having an imaging element for accumulating signal charge corresponding to incident scene light flux in a photo electric converting element, powered by a power source , comprising the steps of:

applying a sweep-out signal having a given frequency for sweeping out unnecessary charge in the imaging element;

monitoring the power source; and

changing the frequency of the sweep-out signal to a lower frequency when a supply voltage level is lower than a predetermined voltage and lies within a given voltage range.

16. A method for operating an imaging apparatus having an imaging element for accumulating signal charge corresponding to incident scene light flux in a photo electric converting element, powered by a power source, comprising the steps of:

applying a sweep-out signal having a given frequency for sweeping out unnecessary charge in the imaging element;

monitoring the power source; and

changing the frequency of the sweep-out signal to a lower frequency when a supply voltage level of the power source is lower than a first predetermined voltage and is greater than a second predetermined voltage which is less than said first predetermined voltage.

17. The method of claim 16 further comprising preventing a sweep-out operation when the supply voltage level is less than said second predetermined voltage.

18. A method for operating an imaging apparatus having an imaging element for accumulating signal charge corresponding to incident scene light flux in a photoelectric converting element powered by a power source and having a shutter release button, comprising the steps of:

monitoring the power source responsive to operation of the shutter release button;

changing a frequency of a sweep-out signal to a lower frequency in preparation for a sweep-out operation to sweep-out unnecessary charge when a supply voltage level is lower than a predetermined voltage and lies within a given voltage range.

19. The method of claim 18 further comprising a lens stop; and changing frequency of the sweep-out signal to the lower frequency when the lens stop is on.

20. The method of claim 19 further comprising: lowering the frequency of the sweep-out signal when the lens stop is off and the supply voltage level is less than said first predetermined voltage.

21. A method for operating an imaging apparatus having an imaging element for accumulating signal charge corresponding to incident scene light flux and a photo electric converting element powered by a power source and having a shutter release button movable from an initial position to a partially depressed position and a fully depressed position, comprising:

a) monitoring the power source responsive to operation of the shutter release button to said partially depressed position;

- b) changing a frequency of a sweep-out signal to a lower frequency in preparation for a sweep-out operation to sweep out unnecessary charge in the imaging element when a supply voltage level of the power source is lower than a predetermined voltage and lies within a given voltage range;
- c) monitoring a lens stop responsive to operation of the shutter release button to the fully depressed position; and
- d) changing the frequency of the sweep-out signal to the lower frequency when the lens stop is on.

22. The method of claim 21 wherein step (b) further comprises changing the frequency of the sweep out signal to a higher frequency when the supply voltage level is greater than said first predetermined voltage.

23. The method of claim 20 wherein step (b) further comprises halting operation of the imaging apparatus when the supply voltage level of the power source is less than a second predetermined voltage which is lower than the first mentioned predetermined voltage.

24. The method of claim 20 further comprising returning to step (b) if the release button has not moved to the fully depressed position after completion of step (d).

25. An imaging apparatus comprising:

an imaging element for accumulating signal charge corresponding to incident scene light flux in a photo electric converting element;

a power source for powering said imaging apparatus;

a signal generator having a lower and a higher operating frequency for generating a sweep out signal coupled to said imaging element for sweeping out unnecessary charge from the photo electric converting element;

control means monitoring said power source for controlling said signal generator to generate a sweep out signal having said higher frequency when the supply voltage level is greater than a first predetermined voltage.

26. The apparatus of claim 25 wherein said control means operates said signal generator to generate a sweep out signal of said lower frequency when said supply voltage level is less than said first predetermined voltage and greater than a second predetermined voltage lower than said first predetermined voltage.

27. The imaging apparatus of claim 25 wherein said control means includes means to prevent operation of the imaging element when the supply voltage level is less than said second predetermined voltage.

28. The imaging apparatus of claim 25 wherein said imaging apparatus includes a shutter release button, a first switch means operative when a shutter release button is moved to a partially depressed position; a second switch means operative when the shutter release button is moved to a fully depressed position; and said control means monitoring said power source when said first switch means is operated.

29. The imaging apparatus of claim 28 wherein said control means monitors a condition of a lens stop responsive to operation of said second switch means for reducing the frequency of the sweep-out signal when the lens stop is on.

30. The imaging apparatus of claim 28 wherein said control means monitors a condition of a lens stop responsive to operation of said second switch means for reducing

the frequency of the sweep-out signal when a lens stop is not operated and when the supply voltage level is less than said first predetermined value.

31. The imaging apparatus of claim 25 wherein said control means reinitiates monitoring of said power source when said second switch means is not operated after completion of a previous battery check sequence.

32. The imaging apparatus of claim 25 wherein said control means prevents monitoring of said power source when said supply voltage level is less than said second predetermined voltage.

33. A method for operating an imaging element for accumulating signal charge corresponding to incident scene light flux in a photo electric converting element, a power source for powering said imaging apparatus, a shutter release button, and a signal generator having a lower and a higher operating frequency for generating a sweep out signal coupled to said imaging element for sweeping out unnecessary charge from the photo electric converting element, said method comprising:

(a) monitoring said power source when the shutter release button is operated to a first position for controlling said signal generator to generate a sweep out signal having

said higher frequency when the supply voltage level is greater than a first predetermined voltage; and

(b) monitoring a condition of a lens stop responsive to operation of said shutter release button to a second position for reducing the frequency of the sweep-out signal when a lens stop is not operated and when the supply voltage level is less than said first predetermined value.--

IN THE ABSTRACT

Please delete the current Abstract and insert the new Abstract attached on a separate sheet.

REMARKS

The present application contains claims 6 and new claims 15-33. Claims 1-5 and 7-14 have been cancelled.

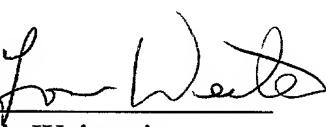
Early examination and allowance of these claims are earnestly solicited.

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Application No.: Not Yet Known

Respectfully submitted,

Kijima et al.

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Enclosure

Application No.: Not Yet Known
Examiner: Not Yet Known

**37 CFR §1.121(b)(1)(iii) and (c)(1)(ii) SPECIFICATION
AND CLAIM AMENDMENTS- MARKED UP VERSION**

6. (Amended) An imaging apparatus having an imaging element for accumulating signal charge corresponding to [an] incident scene light flux in a photo-electric converting element section comprising:

 a sweep-out means for sweeping out unnecessary charge in the imaging element;

 an operating condition judging means for judging [the] a supply voltage level; and

 a control means for [setting a lower] lowering a sweep-out frequency of the sweep-out means when [the] a supply voltage level is lower than a predetermined voltage.

ABSTRACT

An operating condition judging circuit judges a supply voltage level of a power supply source. A controller controls a frequency of sweep-out of unnecessary charge in the imaging element based on an output level of the power supply source for reducing peak consumed current and power consumption and thereby extending battery life.